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NOTES, INFORMATION & NEWS

The Egg Capsule and Young of the Gastropod *Pyrulofusus dexius* (Dall) (Buccinidae: Volutopsiinae)

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Introduction

Four species of the genus *Pyrulofusus* Moerch, 1869, are known currently. These are *P. deformis* (Reeve, 1847), *P. harpa* (Moerch, 1857), *P. dexius* (Dall, 1907), and *P. melonis* (Dall, 1891) (Kantor, 1990). All of them occur in the North Pacific Ocean. However, egg capsules are known only for *P. deformis* (Gonor, 1964) and *P. harpa* (Cowan, 1965). This work describes the egg capsule and young specimens of *Pyrulofusus dexius* (Dall, 1907).

Materials and Methods

The material was collected in the northeastern Sea of Okhotsk in August–November 1997 during an exploratory fishing voyage of the trawler *Karatau* engaged in the study of buccinid gastropods (collectors V. Gulbin and A. Maltsev). Mollusks were collected from a depth of 180–280 m using special traps of Japanese design. Fish was used as a bait. A total of 400 stations was made. Unlike most Buccinidae, species of the genus *Pyrulofusus* are predators. They feed on echinoderms, mainly holothurians (Kantor, 1990) and therefore seldom get into traps. For this reason, only at three stations (sta. 14, 19, 61) out of 400 were a single species of *Pyrulofusus, P. dexius* (Dall, 1907) found, and at one station (sta. 6) its egg capsule (Table 1). At these stations, the near-bottom water temperature was 2.8–3.2°C. Earlier (Kantor, 1990), this species was recorded off the coast of Hokkaido, the southern and northern Kurils, the southern coast of Kamchatka, and off the Aleutian Islands. This is the first record of this species in the northern Sea of Okhotsk.

The egg capsule (No 3/46838) is deposited with the gastropod collection at the Institute of Marine Biology (Vladivostok, Russia).

Results and Discussion

The egg capsule (Figure 1A, B) was found in the northeastern Sea of Okhotsk near the western coast of Kamchatka, at a depth 257–265 m on silty sand substratum. The capsule is low, dome-shaped, and firmly cemented onto the surface of a small stone by its broadest surface, the base. At this point, the capsule is quite circular and has a diameter of 58 mm. A circular fringed band of whitish material surrounds the base and is 1–6 mm wide. Height of the capsule is 24 mm. It is composed of conchiolin. The capsule is yellowish ashen in color, hard, about 0.2–0.25 mm thick, and its surface is clearly marked with a very fine pattern resembling a dense network of rectilinear wrinkles 0.3–2 mm long, crossing each other at acute angles (Figure 1C). A coat of lime, covering freshly deposited capsules (Kantor, 1990) was not preserved. Inside, there is a thinner, more flexible smooth inner layer, which is semitransparent and makes visible the outer surface pattern. The capsule base is thin (approx. 0.15 mm), membranelike, semi-transparent, and lacks a pattern.

The *Pyrulofusus* capsule has no special devices for releasing the young, such as protein "corks," dissolving by the time of maturation in *Urosalpinx cinerea* (Hyman, 1967), or a cap, opening by hatching time in *Trophon* (Thorson, 1946). Presumably, the hatchling mollusks can gnaw through the capsule wall at any place.

The egg capsule contained three young specimens of near-hatching age. Not a trace remained of any nurse eggs that may have been present. As is known, apart from nurse eggs, there is an additional food source of embryos—the protein layer of the capsule. This assumption is supported by the fact that the protein layer was absent in the capsule.

Three young specimens found in the capsule were pale lilac, with a well-developed, dextral calcareous shell 20–21 mm high and 13.0–13.5 mm in diameter. They had 2.75 whorls. The first two whorls were almost smooth, except for rare incremental lines and a faint indication of spiral sculpture. The third whorl was distinguished by its pronounced spiral sculpture of 30–32 ridges. In addition,

Table 1

Characteristics of stations where the shells and egg capsule *Pyrulofusus dexius* were found.

Station no	Date	Coordinates (lat. N.–long. E.)	Depth (m)	Substratum
6	5 August 1997	57°59′–155°44′	257–265	silty sand, shingle
14	7 August 1997	57°48′–155°57′	117–120	silty sand, shingle
19	10 August 1997	58°46′–154°14′	150–164	silty sand, shell
61	22 August 1997	58°03′–152°49′	180	silty sand

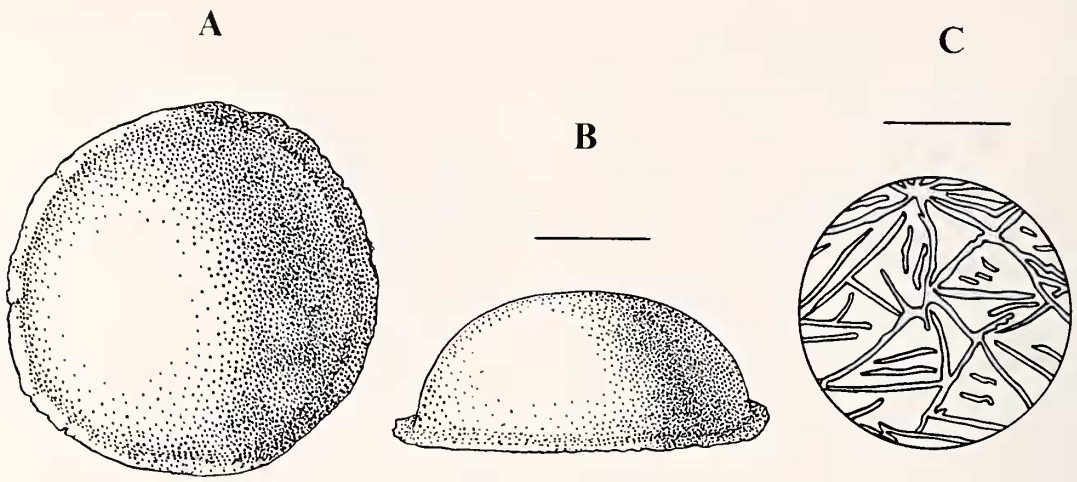

Figure 1

Pyrulofusus dexius (No 3/46838). A, B. Egg capsule; scale bar = 20 mm; C. A pattern on the outer surface of the egg capsule; scale bar = 1 mm.

five wide, oblique, S-shaped axial folds appeared on the third whorl. The capsule and young specimens it contained were studied and described *in vivo*, after which they were preserved in formalin. Unfortunately, the shell of the young specimens dissolved in the formalin and it was impossible to take a photo of it.

From the capsules of *P. deformis* and *P. harpa* (Gonor, 1964; Cowan, 1965), the capsule of *P. dexius* differs by its much greater diameter and flattened low-domed form. The young differ by the dextral shell and by the number of spiral ridges (Table 2).

The egg capsule of *P. melonus* (Dall, 1891) remains so far unknown. Similar to *P. dexius,* it has a dextral shell, but these species differ fairly well by the shell sculpture, which is also clearly seen even in the capsule young.

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Table 2

A comparison of the egg capsules and young of the three species of the North Pacific and subarctic *Pyrulofusus*.

Characteristic	*P. dexius*	*P. harpa*	*P. deformis*
Capsule:			
Covering outer layers	fine-patterned	patterned	without pattern
inner layer	smooth	smooth	?
Shape:	low-domed	hemispherical	subspherical
Maximum diameter	58 mm	39 mm	27 mm
height	20 mm	21 mm	24 mm
Young:			
Shell length	20.1 mm	19.5 mm	17.8 mm
Spiral sculpture	appears on third whorl 32 ridges	appears on third whorl 24+ ridges	appears on second whorl 40+ ridges
Adult:			
Shell form	dextral	sinistral	sinistral
Maximum height	151.2 mm	122 mm	144.4 mm